COMMENTS AND RESPONSE

In view of the comments below, Applicants respectfully requests that the Examiner reconsider the present application including rejected claims, as amended, and withdraw the claim rejections.

Claim Rejections – 35 USC § 103

The Examiner has rejected claims 1, 4-6, 8, 9, 11-13, and 15-17 under 35 U.S.C. § 103(a) as being allegedly unpatentable over United States Patent No. 6,556,621 to Richards et al. ("Richards") in view of United States Patent No. 6,614,864 to Raphaeli et al. ("Raphaeli"). Applicants respectfully traverse this rejection.

By this response, Applicants have amended claims 1, 8, and 15 to recite that "the incoming pulses are at least one of bi-phase modulated, and quadrature phase modulated." This feature is not disclosed or suggested in either Richards or Raphaeli. This renders moot the current rejection. These amendments to claims 1 and 8 place them in the same state as claims 3 and 10. Therefore, this should not serve to limit the scope of the claims under *Festo Corp. v. Shoketsu Kinzoku Kogyo Kabushiki Co., Ltd.*, 535 U.S. 722 (May 28, 2002).

Claims 4-6 and 16 depend variously from claim 1 and are allowable for at least the reasons given above for claim 1. Claims 9, 11-13, and 17 depend variously from claim 8 and are allowable for at least the reasons given above for claim 8.

Based on at least the amendments and arguments given above, Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 1, 4-6,

8, 9, 11-13, and 15-17 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards in view of Raphaeli.

The Examiner has also rejected claims 7 and 14 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards and Raphaeli, and further in view of United States Patent No. 5,812,593 to Kaku ("Kaku").

Claim 7 depends from claim 1 and is allowable for at least the reasons given above for claim 1. Claim 14 depends from claim 8 and is allowable for at least the reasons given above for claim 8. Nothing in Kaku cures the deficiencies in Richards and Raphaeli discussed above.

However, in an effort to expedite prosecution and better recite the current invention, Applicants have amended claims 7 and 14. In particular, Applicants have amended claim 7 to recite "finding a first maximum over a first phase range," "searching a region around the second over a second phase range to determine if the second maximum is a true maximum, wherein the second phase range is narrower than the first phase range." Similarly, Applicants have amended claim 14 to recite "a location mechanism configured to find a first peak over a first phase range," and "a search mechanism configured to search an area around the second maximum over a second phase range to determine if the second maximum is the true maximum, wherein the second phase range is narrower than the first phase range." Support for these amendments can be found, for example, in Figure 17 of Applicant's drawings and the associated portion of Applicant's specification: page 30, line 9, through page 31, line 13.

These amendments make it clear that at first, a larger range scan is performed (e.g., a full phase range scan between 0 and 2π radians), and once a maximum value of

correlation is determined, the correlation is again computed over a new, reduced phase range centered about the current maximum phase angle.

In contrast, the device disclosed in Kaku simply determines a correlation result as a peak value by comparing a correlation result output from a search correlator with immediately preceding and succeeding correlation results. (See, e.g., Kaku, column 4, lines 23-27.) Nothing in Kaku discloses or suggests first finding a first maximum over a first phase range and analyzing the correlation function to find a second maximum that exceeds the first maximum, and then searching a region around the second maximum over a second phase range to determine if the second maximum is a true maximum, where the second phase range is narrower than the first phase range. Likewise, nothing in Kaku discloses or suggests a location mechanism configured to find a first peak over a first phase range, a correlation analysis mechanism configured to analyze the correlation function in order to find a second maximum to exceed the first maximum, and a search mechanism configured to search an area around the second maximum over a second phase range to determine if the second maximum is the true maximum, where the second phase range is narrower than the first phase range.

Based on at least the arguments given above, Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 7 and 14 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards and Raphaeli, and further in view of Kaku.

The Examiner has also rejected claims 3 and 10 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards, Raphaeli, and further in view of United States Patent No. 5,289,476 to Johnson et al. ("Johnson").

By this response, Applicants have cancelled claims 1 and 10 and have incorporated their limitations into claims 1 and 8, respectively. And while this technically renders the rejection of claims 3 and 10 moot, Applicants offer the following comments with respect to amended claims 1 and 8, which are identical in scope to cancelled claims 3 and 10.

In particular, the Examiner has provided no motivation to combine the teachings of Johnson with those of Richards and Raphaeli. He asserts that BPSK and QPSK are commonly used, and that one skilled in the art would have clearly recognized that the nature of various modulations that can be selected is dependent on the respective application. But nowhere does he provide any teaching that BPSK or QPSK would be applicable to a UWB apparatus. Johnson relates to a power line communication apparatus, and as a wideband transmission, uses a very different acquisition process than that used in Richards.

It is not sufficient to maintain a rejection for the Examiner to simply identify each claimed element in cited references. Rejecting claims based solely on the Examiner finding corollaries for the claimed elements would permit the Examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. And such an approach is not permissible.

In order to prevent the use of hindsight based on the invention, the Examiner must show a motivation to combine the cited elements – some reason that a skilled artisan confronted with the same problems as the inventor and with no knowledge of the claimed invention would select the elements from the cited prior art references for combination in

the manner claimed. But it is not sufficient for the Examiner to issue a simple invocation of skill in the art. If such a rote invocation were sufficient to supply a motivation to combine, most areas of technology would rarely experience a patentable technical advance. The requirement of a suggestion to combine stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.

For specific motivation, the Examiner cites column 2, lines 23-32 of Johnson, which note that the QPSK mode can be enabled when low levels of interference allow fast transmission, and BPSK mode may be enables when greater reliability is necessary in a noisy environment. However, this refers to a power line communication environment, and should not be considered directly applicable to a UWB system.

In fact, the definition of impulse radio given in the Background of the Invention of Richards specifically teaches away from the use of phase modulation in impulse radio. United States Patent No. 5,667,927 to Fullerton et al. ("Fullerton-1"), United States Patent No. 5,687,169 to Fullerton ("Fullerton-2"), and United States Patent No. 5,832,035 to Fullerton ("Fullerton-3"), which are all cited by Richards to define impulse radio, each specifically note that "amplitude and frequency/phase modulation are unsuitable for this particular form of impulse communication. (See, e.g., Fullerton-1, column 9, lines 29-35, Fullerton-2, column 6, lines 37-43, and Fullerton-3, column 6, lines 22-28.)

Thus, even by the admission of Richards, the primary document cited in this rejection, phase modulation as unsuitable for impulse radio. To then later provide a list of every possible modulation scheme and say very broadly, as Richards does, that "any aspect of the waveform can be modulated to convey information (see, Richards, column 6, lines 42-51) does not provide a proper suggestion to modify the impulse radio

disclosed in Richards counter to what is specifically noted in Fullerton-1, Fullerton-2, and Fullerton-3.

Because the Examiner did not provide anything beyond a general assertion that it is well known that BPSK and QPSK are commonly used, based on the Examiner's skill in the art, for the motivation to include BPSK or QPSK modulation in a UWB system, Applicant asserts that the Examiner engaged in hindsight analysis, improperly using Applicant's own claimed invention to provide the motivation to combine the cited references.

Based on at least the arguments given above, Applicants therefore respectfully request that the Examiner withdraw the rejection of claims 3 and 10 under 35 U.S.C. § 103(a) as being allegedly unpatentable over Richards in view of Raphaeli, and further in view Johnson.

Invitation for Interview

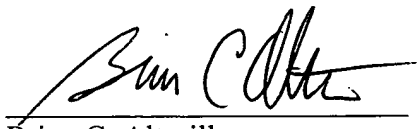
Applicants further invite the Examiner to request an interview, either telephonic or in person, with the undersigned if the above comments do not make the Applicant's position clear, or if the Examiner wishes to make any suggestions to further prosecution. The undersigned can be reached at the telephone number below.

Conclusion

Accordingly, Applicant respectfully submits that the claims, as amended, clearly and patentably distinguish over the cited references of record and as such are deemed allowable. Such allowance is hereby earnestly and respectfully solicited at an early date.

Although it is not anticipated that any additional fees are due or payable, the Commissioner is hereby authorized to charge any fees that may be required to Deposit Account No. 50-1147.

Respectfully Submitted,



Brian C. Altmiller
Reg. No. 37,271

Date: June 17, 2004

Posz & Bethards, PLC
11250 Roger Bacon Drive
Suite 10
Reston, VA 20190
Phone (703) 707-9110
Fax (703) 707-9112
Customer No. 23400